BIOLOGICAL EVALUATION
Mountain Pine Beetle in Lodgepole Pine
Pinedale District
Bureau of Land Management
Wyoming
1971

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INTRODUCTION

The Scab Creek infestation is one small part of a general, rather extensive infestation that has been in progress since 1965, or perhaps a few years earlier. The infestation started in the fringe-type, low elevation stands and has been moving at a steady pace into the higher elevations near and within the Bridger Wilderness on the Bridger National Forest. The overall infestation, with the exception of the southern half, is, for the most part, on the decline. Many of the lodgepole pine stands at the lower elevations which nurtured the infestation are seriously depleted. Cruise data shows that anywhere from 30 to 45 percent of the trees above 5.0 inches d.b.h. have been killed. In the interior stands at the upper elevations (8,500 feet and above), a completely different situation exists. In the Spring Creek Park area east of Willow Lake, less than 10 percent of the stand has been killed to date. Although the infestation has yet to run its course, trend data[1/] indicates that peak killing has been reached and that subsequent mortality will be negligible.

Control, using the fall, pile and burn technique, has been undertaken in the Scab Creek area since 1969 when slightly more than 21 trees per acre were treated (Figure 1). During the next 2 years--1970 and 1971--some 14 and eight trees per acre were treated, respectively. A 1971 on-the-ground survey showed an infestation level of 1.1 trees per acre. These infested trees have not been treated. No treatment of any type was undertaken in the contiguous infestation on the Bridger National Forest.

A continuation of control in the Scab Creek infestation is not recommended. Some tree killing will continue to occur, but it will be at a relatively low level. Falling many of the remaining snags in high-use areas will reduce the recreation hazard.

1/ This area is sampled annually to record infestation length, stand structure before and following the outbreak, and the rate of stand attrition.

GENERAL INFORMATION

INSECT: Mountain pine beetle, Dendroctonus ponderosae Hopkins.

HOST TREE: Lodgepole pine, Pinus contorta Dougl.

LOCATION: Scab Creek, Bureau of Land Management lands southeast of Pinedale, Wyoming.

TYPE OF DAMAGE: Killing of lodgepole pine.

EXTENT OF INFESTATION: Tree killing has and is occurring throughout the lodgepole pine type on the West Slope of the Wind River Range. The Scab Creek infestation comprises three closely spaced but separate areas, having a total area of approximately 160 acres (see appended map).

FEATURES OF THE AREA: The principal use of the area is for recreation. Being adjacent to the Bridger Wilderness and accessible by automobile, it is used by relatively large groups as a trail head. Plans are to improve the existing trail and to provide better camping facilities.

BIOLOGICAL INFORMATION

An on-the-ground examination was made in two of the areas (2 and 3 as shown on the attached map) during a snowstorm on December 9, 1971, by entomologist William Klein and BLM Forester David Crumb and his assistant, Bill Behrends. All of the trees infested from 1968 to 1970 had been felled, piled and burned. The trees (snags) infested prior to 1968 were still standing. There were a few new (1971) attacks, but they were confined to the smaller trees. Most of the larger trees were dead or destroyed. Other than the absence of many of the larger trees, the stands appeared similar to stands on the Bridger National Forest where the infestations were left unchecked.

DISCUSSION

Stand structure data, taken in other lodgepole pine stands depleted by the mountain pine beetle on the Bridger National Forest and in other areas throughout the Intermountain area, indicate that infestations last from 7 to 8 years, with peak killing occurring the fifth or sixth year, and that anywhere from 10 to 45 percent of the stand (5.0 inches d.b.h. and larger) has been killed. Although highly variable from stand to stand and dependent on initial stocking and other factors, this means that as many as 30 to 130 trees per acre may be lost. In

the Scab Creek infestation, control records show that slightly more than 45 trees per acre have been lost since 1968, possibly the year of peak killing (21.5 trees per acre).[1/] The question is now, how many trees were killed prior to that time?

Figure 1 is an attempt at reconstructing the trend of the infestation and the annual rate of attrition prior to 1968; i.e., back to the time the infestation began, possibly 1964. Assuming, then, that the 1964 infestation level was one tree per acre and that in ensuing years the rate of tree killing followed a reasonable increase, it is possible to roughly approximate pretreatment losses. Figure 1 shows that (1.0 + 4.0 + 9.0 + 13.0) 27 trees per acre were estimated to have been killed prior to 1968. The combined loss totals 72.1 trees per acre, which would probably have occurred had control never been attempted. This estimate will probably be checked sometime this summer by a systematic cruise.

Biological evaluations made in the contiguous infested stands on the Bridger National Forest[2/] indicate that the infestation reached a peak in this area during 1968 and has been on the decline since. Our recommendation then was that the infestation was too widespread and well established for any system of individual tree treatment to be successful and that effective long-range control could only be effected by logging, and thereby converting the infested and threatened stands to a less susceptible state.

RECOMMENDATIONS

Individual tree control, at best, is strictly a delaying action. If the timber is to be harvested in the immediate future and the derived value offsets control costs, then control may be practical and beneficial. However, if control is undertaken solely to save trees and preserve the stand, then efforts have been wasted. It has been demonstrated that, following an outbreak, stand structure in both treated and untreated stands are essentially the same - the difference being that treatment extends the life of the infestation a few years.

1/ Figure 1 shows 21.5 trees per acre in 1969. This was the year they were treated; actually, they were infested in 1968. Similarly, the 14.4 trees treated during 1970 were infested in 1969, and so on.

2/ Forest Insect Conditions on the Bridger National Forest, 1968. Copy available upon request.

Since the Scab Creek area is used principally for recreation, a continuation of control effort is not recommended. Some tree killing will continue for the next 2 or 3 years, but it will be widely scattered and at a relatively low level. The nearby infestations have declined naturally and will not exert pressure on the area.

Although falling, piling and burning the infested trees during the height of the outbreak had little biological influence, there were some important secondary benefits. First, destroying many of the infested trees (44 per acre) will significantly reduce the fire hazard. If these snags were left standing, they would be on the ground within 10 years. Secondly, snag removal, particularly near the most heavily used areas, will minimize the hazard to users. The mountain pine beetle will kill a few additional trees in these areas, and they, along with the existing snags, should also be felled.

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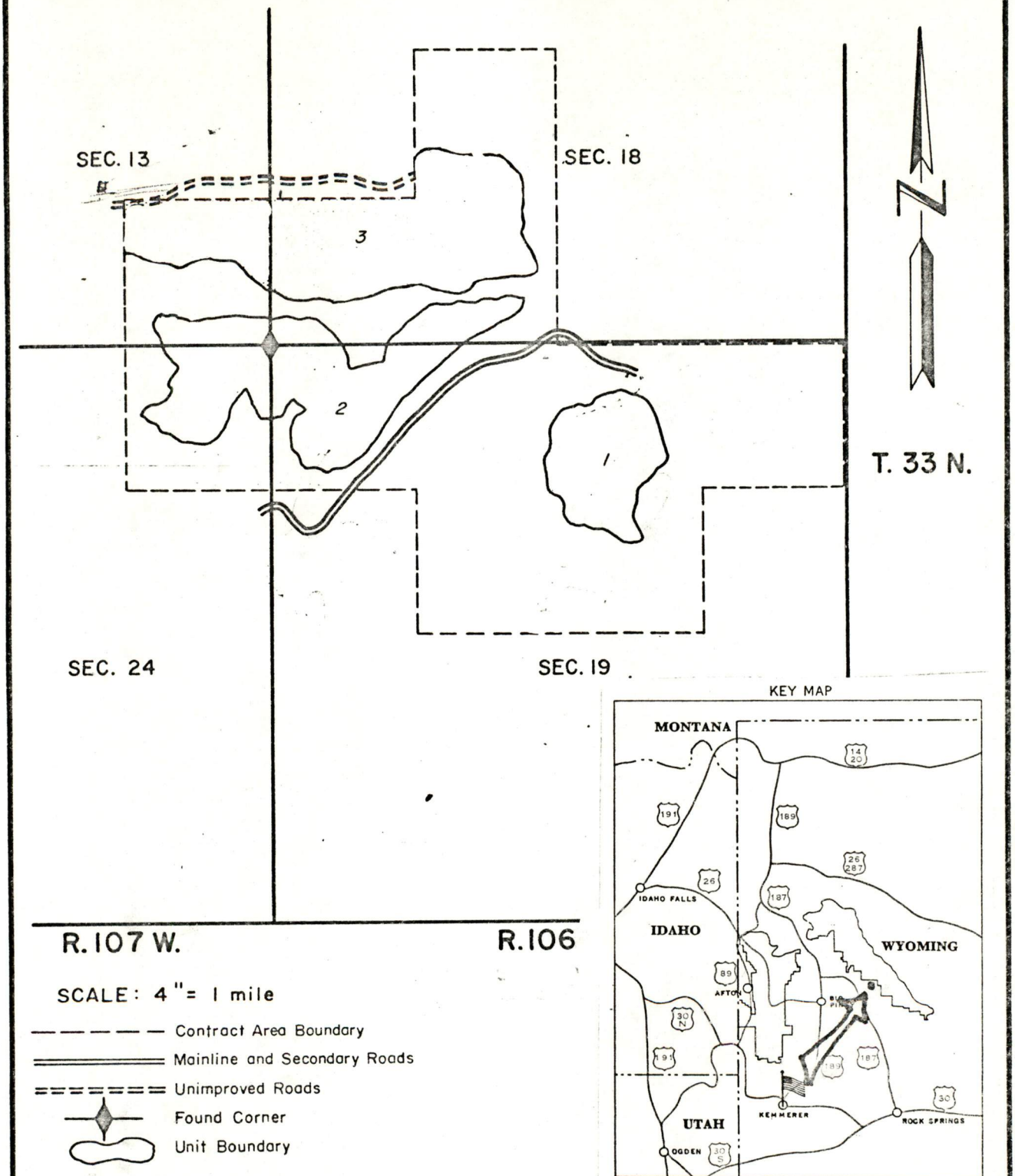

MOUNTAIN PINE BEETLE CONTROL AREAS
BUREAU OF LAND MANAGEMENT LANDS
PINEDALE DIST. WYOMING
1969-71

A F A 4/20/70

Number of Trees per Acre Killed by the Mountain Pine Beetle, Scab Creek Area

	Estimated 1/				Actual 2/				
No.	1965	1966	1967	1968	1969	1970	1971	1972	Total
Trees	1.0	4.0	9.0	13.0	21.5	14.4	8.1	1.1	72.1

1/ Mortality estimates based on length and trend of infestations recorded on other areas.

2/ 1969-71 counts are actual number of trees treated - 1972 counts are actual but not treated.

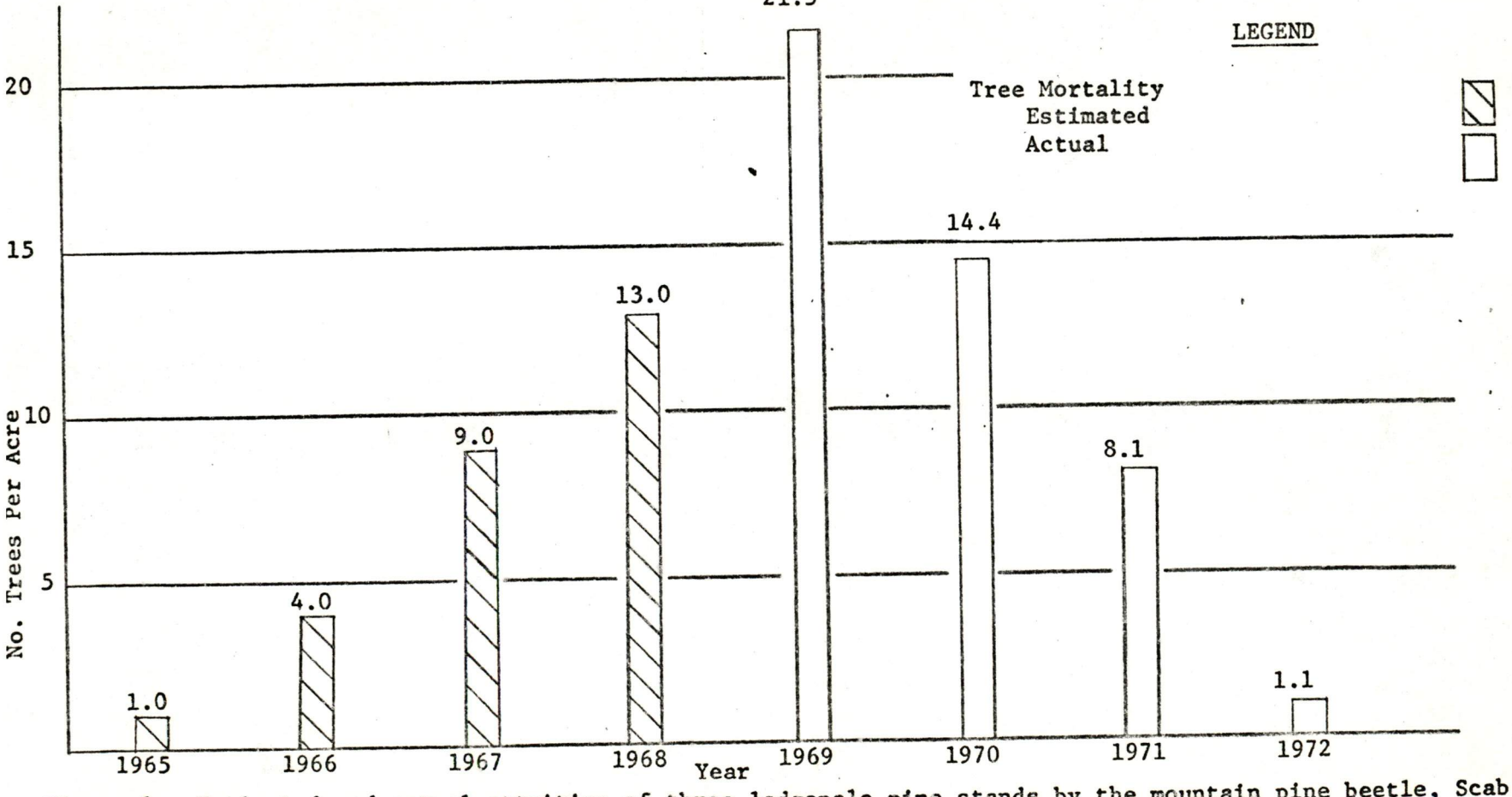

Figure 1. Estimated and actual attrition of three lodgepole pine stands by the mountain pine beetle, Scab Creek area.